

THE UNDERGROUND ECONOMY IN THE CARIBBEAN COUNTRIES

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Abstract- The purpose of this study is to analyze the underground economy in the Caribbean countries for the period 1970-2009, using annual data with a panel approach, including a set of social and institutional variables (the degree of urbanization, the Index of Globalization, the Index of Participation and the Index of Competition). After a brief introduction, a survey of the economic literature on this issue is shown, before estimating the determinants of the underground economy. The higher tax burden, the higher the tax evasion and higher currency holdings relative to M2. Some notes on the policy implications of this analysis conclude the paper.

Key words- Underground economy, Caribbean countries, tax burden, governance.

JEL Codes- O17, D78, H11, H26.

1. Introduction

The underground economy is a widespread phenomenon which might involve a lot of economic sectors. It consists of various types of activities, ranging from domestic work to registered businesses that underestimate their sales and overestimate their expenditures. Since informal economy data are not reflected in the national statistics, trying to estimate its size and value could be particularly troublesome. In fact, if the informal sector is not included in the official macro-indicators, these will be downward biased, precluding international comparisons, given the inaccurate data collection procedure. As Feige (1990) stressed, the size and growth of unreported income and the implied tax gap affect the size of government deficits, government debt and tax reform policies.

Recognizing its policy relevance, researches on the black economy started in the Fifties. Kaldor (1956) and Cagan (1958) marked the early beginnings of this kind of research. Yet, there are still some scepticism on measuring its size and evolution.

The aim of this paper is to analyze the underground economy in the Caribbean area, studying the effects of such macro variables on currency demand in a panel framework, from 1970 to 2009. In fact, few studies on this issue have been devoted to a homogeneous group of countries. Moreover, as stated by Greenidge *et al.* (2009) in the Caribbean very little research has been done on the topic of the informal economy.

The outline of the paper is organized as follows. The succeeding section provides clarifying concepts in order to define the underground economy. While Section 3 provides data and methodological issue, Section 4 presents the empirical results. The last section winds up

with concluding remarks and some policy implications.

2. Understanding the Underground Economy

In the literature, several terms are commonly used to define the unmeasured economy: informal, hidden, underground, invisible, shadow, unofficial, unrecorded, parallel, clandestine and subterranean. To a large extent, these differences in terminology and definitions reflect differences in research objectives (Gërkhani, 1999; Schneider and Enste, 2000). In their taxonomy, Mirus and Smith (1997) distinguish informality by whether activities are legal or illegal, and by whether they involve monetary or non-monetary barter transactions. While Dreyden and College (1996) classify the informal economy into three categories: (1) "pure" tax evasion, (2) the irregular economy, and (3) illegal activities.

Generally, individuals are motivated to participate in the underground economy either to avoid the payment of taxes or to prevent the loss of any government assistance (Bajada, 1999). But another two motives could be represented by: a) inflation, since the rise in the cost of living can increase the real tax burden and so provide a possible motive for working in the underground economy (O'Higgins, 1985); b) friends and relatives: in fact, another motive for participating in the underground economy is an individual's knowledge that friends and/or relatives are working in the subterranean economy (Cowell, 1990).

It is sometimes suggested that participation in the underground economy can offer an escape from economic hardship in the official economy. As Henry (1981) also suggests, it may also offer individuals access to goods and services that may not be available in the

official economy because of inadequate demand.

Any economic activity that is not computed in the statistics of the national income is considered as a part of the hidden economy. Table 1 below shows some of the various ways, both legal and illegal, in which people can participate in the underground economy.

Castells and Portes (1989) present several hypotheses to explain the growth of the underground sector. They suggest the expansion of the informal economy is:

- Part of the process of economic restructuring following the structural crisis of the 1970s.
- A reaction against the state's regulation of the economy.
- The result of increasing international competition.
- The process of industrialization in many developing countries.
- The result of poverty in which millions of people subject to harsh living conditions are forced to accept any solution to their misery.

Measuring the informal economy is not an easy task. Depending on how and what one chooses, there are about fourteen methods which have been used to estimate the size of the underground economy (Georgiou, 2007). These approaches can be broadly divided in to two major approaches: direct and indirect.

Direct (or micro) approaches include micro-surveys of the informal economy, tax audits and other compliance methods.

Vuletin (2008) classified indirect approaches as : (i) the discrepancy between national expenditure and income statistics; (ii) the discrepancy between the official and actual labour force; (iii) the "electricity consumption" approach by Kauffman and Kaliberda (1996); (iv) the "transaction" approach by Feige (1979); (v) the "currency demand" approach by Cagan (1958); and (vi) the "Multiple Indicators Multiple Causes" (MIMIC) approach of Frey and Weck-Hanneman (1984). The transaction and currency demand approach are together called "monetary" approach.

3. A Literature Review on the Underground Economy

Gutmann (1977) provided the first published estimate of the size of the underground economy in the United States and his work subsequently generated considerable interest.

CBA (1980) and Carter (1984) have made contributions to discussing illicit economic behaviour in Australia, while Bajada (1999) showed that the underground economy has been growing rapidly particularly since 1994. Moreover, on the basis of Granger causality tests, he concluded that disturbances in the official economy, which affect the level of income, dominate the effects of the same disturbance generated by rising levels of unemployment.

A research on the Bulgarian shadow economy using the physical input method indicated that the relative proportion of the shadow economy from the official

economy has fluctuated between 25% and 37% of GDP over the 1989-1998 period, with a declining trend since 1996 in the relative proportion of the shadow economy (AA.VV., 2001).

Dell'Anno (2003) using the Italian shadow economy pinpointed two relevant results: (i) the relationship between underground economy and growth rate of GDP is negative; according to Frey and Weck-Hanneman (1984), on the contrary to the MIMIC estimated in New Zealand (Giles, 1999a) and Canada (Giles and Tedds, 2002); (ii) the growth rate of currency outside of banks is not relevant as indicator of the Italian shadow economy.

Faal (2003) demonstrated the existence of a large underground economy in Guyana, which averaged about 40 percent of GDP in the Seventies, before increasing sharply to an average of 76 percent of official GDP during the Eighties, reflecting excessive Government regulation and inward-looking economic policies. During the Nineties the size of underground economy fell, even though at an average of 47 percent.

Chaudhuri *et al.* (2005) estimate the size of the hidden economy using state level data from India over the period 1974 to 1996. On average, the size has grown from 13.1 percent to 26.3 percent showing a growth rate of 3 percent per annum. They also have shown that an increased growth of per capita newspaper circulation helps to curb the growth in the size of the shadow economy activities.

Maurin *et al.* (2006) measured the underground economy of Trinidad & Tobago using annual time series data covering the period 1970-1999, within the Structural Cointegrating VAR (SCVAR) framework. The size of the underground economy rose from a low of about 14% of measured GDP in the early 1970s to a high of 36% in 1981, and is currently about 20% of measured GDP, with no marked tendency to get larger in the near future.

Dell'Anno *et al.* (2007) offered estimations of the evolution of the underground economy in three Mediterranean countries (France, Spain and Greece). The results confirm that unemployment, the fiscal burden and self-employment are the main causes of the underground economy in these countries, and confirm that an inverse relationship exists between the official GDP growth rate and that of the unofficial economy.

The size of the informal economy and the relative contribution of each underlying factor in 32 Latin American and Caribbean countries in the early 2000s have been provided by Vuletin (2008). He found that a burdensome tax system, rigid labor markets, higher inflation, and dominance of the agriculture sector are the key factors in determining the informal economy, representing altogether around 79 percent of the informal economy variance.

The estimates provided by Greenidge *et al.* (2009) – concerning the Barbadian informal sector for the period 1972-2007 – indicate that the underground sector is quite large and has grown over time to about one-third the size of the official economy.

Arby *et al.* (2010) hypothesized that in a country like Pakistan, tax is not the only factor that induces the

economic agents to be in informal but the lack of education also keeps them away from a formal and recordable way of economic activity. The results indicate a negative coefficient of the variable for education. The ARDL approach shows that the underground economy increased from less than 30 percent in 1960s to 33 percent in 1990s and then declined to 23 percent on average in 2000s. While the electricity consumption approach shows that unmeasured economy increased from about 5 percent of total size of the economy in 1970s to 29 percent in 1990s and then declined to 27 percent in 2000s. Finally, the MIMIC model shows that the informal economy has been around 30 percent.

The estimates for Ethiopia due to Asaminew (2010) revealed that the informal economy was widespread between 1977-1991, since the country was troubled by civil war and policy instability. During this period, the shadow economy reached an average size of 41.5% of the recorded economy. After the Nineties reform packages, the size of the informal economy declined to 30%.

Biswas *et al.* (2010) studied the effects of the shadow economy on pollution levels as well as on corruption levels in the public administration. Using panel data covering the period 1999-2005 for more than 100 countries, the empirical findings confirm that the relationship between the shadow economy and the levels of pollution are dependent on the levels of corruption.

The nexus between religion and shadow economy has been investigated by Heinemann and Schneider (2010), for 162 countries around the world. The empirical findings indicate that countries with close ties between state and religion have a lower share of economic activity in the informal economy. This is in line with the view that religion uses its normative influence to protect state interests if there is a close alliance between both.

The size of the underground economy in Japan was empirically tested by Kanao and Hamori (2010). The results show that (i) the size of the underground GDP peaked in the early 1990s but has been declining since; (ii) the underground economy reached its peak in 1992, approximating 25% of nominal GDP.

Schneider *et al.* (2010) presented estimations of the underground economies for 162 countries, over 1999 to 2007. According to their findings, the weighted average size of the underground economy (as a percentage of "official" GDP) in Sub-Saharan Africa is 37.6%, in Europe and Central Asia 36.4% and in high-income OECD countries 13.4%. Moreover, econometric analyses show how an increased burden of taxation (direct and indirect ones), combined with (labour market) regulations and the quality of public goods and services as well as the state of the 'official' economy are the driving forces of the shadow economy.

Kholodilin and Thieben (2011) studied the extent of the shadow economy in 38 OECD member states over the period 1991-2007 is investigated. The ranking of countries is consistent with that of other studies: among the industrial countries above average are, for instance, Greece, Italy and Portugal. Below average are some

Scandinavian countries and the USA. On the other hand, Eastern European countries have relatively high underground economies between 4% and 6% of official GDP, while Turkey has an estimated underground economy of somewhat below 10% of GDP.

4. The model, methodology and data

The monetary approach of estimating underground economy was developed on the Cagan's (1958) proposition that higher tax rates induce people to use currency for transactions to avoid tax reporting. The pioneering works in this area include Gutmann (1977), Feige (1979), and Tanzi (1983). This approach consists of specifying a demand for currency equation to be used to derive the effect of a change in the tax level on that demand. To estimate our model, which includes a set of social and institutional variables, we can summarize this in the following specification for currency demand:

$$C/M2 = f(Y, r, p, R, G, E, F, OT, U, IG, IP, IC) \quad (1)$$

where $C/M2$ = the ratio between currency and money supply ($M2$), Y = real per capita income, r = the real interest rate, p = the inflation rate, R = the real Government revenue, G = the real Government expenditure, E = the private consumption expenditure, F = the domestic credit to private sector, OT = the openness to trade, U = the degree of urbanization, IG = the Index of Globalization, IP = the Index of Participation, IC = the Index of Competition, (see the table 1 for more details).

In using the regression approach, we find evidence of persistence in the dependent variable, while the explanatory variables are endogenous. When such econometric problems exist, the traditional panel data estimators (Pooled OLS, Fixed Effects and Random Effects models) don't yield consistent estimates. The GMM dynamic panel data methods, however, can simultaneously deal with the problem of persistence and endogeneity. We, therefore, focus our discussion of results to this estimator as argued below. The use of GMM dynamic panel data model requires that the error term of the equation in levels be white noise. This is tested by checking the absence of second order autocorrelation in the differenced equation. Building on the work of Anderson and Hsiao (1981), Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998) developed a system estimator (GMM-SYS) that uses additional moment conditions.

We constructed a balanced panel for twelve Caribbean countries: Antigua and Barbuda, Bahamas, Barbados, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago. In table 2 the variables of the model are summed up. All series contain yearly data, with the specific source.

The competition variable portrays the electoral success of smaller parties, that is, the percentage of votes gained by the smaller parties in parliamentary and/or presidential elections. The variable is calculated by

subtracting from 100 the percentage of votes won by the largest party (the party which wins most votes) in parliamentary elections or by the party of the successful candidate in presidential elections. The variable thus theoretically ranges from 0 (only one party received 100 % of votes) to 100 (each voter cast a vote for a distinct party).

5. Econometric results

In this section we present and discuss the results of our econometric analyses. Table 3 reports the descriptive statistics for the variables used in the estimation. There is a wide cross-country variation in the currency ratio for Caribbean countries ranging from 10 to 77 percent.

A simple correlation coefficient between two variables indicates a linear relationship between the variables without controlling for the effect of other potential explanatory variables. To gauge the separate effect of each explanatory variable after controlling for the effects of other variables, we further investigate the relationship using regression analyses.

The table 5 contains the empirical findings of our regression analyses. The dynamic specification of empirical models leads the LSDV estimator to be inconsistent and unbiased when T is fixed and N goes to infinity (Verbeek, 2008). In this case, instrumental variable estimators are used to solve this econometric issue.

The first two columns represent the Pooled OLS and Within Groups results, respectively. In the third column are shown the estimates for the Anderson-Hsiao First-Differenced 2SLS estimator. With this instrumental variable regression, the dependent variable is specified in first-differences. We treat the year dummies and the country-specific dummies as (strictly) exogenous, and also included in the instrument set. Moreover, we use as instruments also the first and second lag of the dependent and explanatory variables. In fact, we treat as endogenous the lag dependent variable in first-differences. The fourth column contains the results for the Arellano-Bond First-Differenced GMM, using the finite-sample correction proposed by Windmeijer (2005). We include only the second and third lags of the level of our variables, as well as the year and country dummies, in the instrument set. Only the equations in first-differences are used in estimation. In the last column the GMM-System estimates are presented. We use a 2SLS as the one-step estimator. Moreover, the lagged levels of $C/M2$, Y , r , p , R , G , E and F dated from $t-3$ to $t-4$ are the instruments for the equations in first-differences; while the lagged first-differences of these variables dated $t-2$ (only) are the instruments for the equations in levels. As instruments for the equations in levels only, the year and country dummies have been chosen.

For the specification (1), the Hansen's (1982) J statistic chi-squared test is reported. A significant test statistic indicates that the instruments may not be valid; here, we don't reject the null hypothesis. Then we perform a test to determine whether endogenous regressors in the model are in fact exogenous (the C difference-in-Sargan

statistic is reported): since the test statistic is not significant, the variables being tested must be treated as exogenous. The specification test pertains to testing the presence or absence of second order autocorrelation. The result of the Arellano and Bond (1991) test reports an autocorrelation statistic with a P-Value greater than 0.05, implying that the null is not rejected at 5 percent. We, therefore, conclude that there is no evidence for second order autocorrelation.

Most of the coefficients have the expected signs. The coefficient of interest rate is negative, reflecting the opportunity cost on holding currency; while the coefficient on real per capita income is positive, reflecting the fact that economic growth acceleration would arise a corresponding increase in the use of currency, following increases in the aggregate demand. Moreover, the lagged value of the currency ratio is highly significant, which implies that the dependent variable is persistent.

The higher tax burden, the higher the tax evasion and higher currency holdings relative to M2, other things being equal. Given these results on Government revenue, it can be said that countries with high fiscal burden experience rampant tax evasion; if high tax rates can be backed by strong enforcement capabilities, however, tax evasion would be small (Embaye, 2007).

In the last equation, we report the results of robustness checks on the coefficient estimates of the variables of interest. The robustness check is undertaken by including the openness to trade, the urbanization degree, the Index of Participation and the Index of Competition as additional conditioning variables. The results of including these covariates in our estimation demonstrate that they are significant. In fact, this inclusion increases the robustness of the significance of the dependent variable.

6. Conclusion

The purpose of this paper is to analyze the underground economy in twelve Caribbean countries, studying the effects of such macro variables on currency demand in a panel context. To this extent, we have studied the determinants of currency/M2 ratio in a model which includes a set of social and institutional variables (the degree of urbanization, the Index of Globalization, the Index of Participation and the Index of Competition) using annual data for the period 1970-2009. According to our econometric results, the higher tax burden, the higher the tax evasion and higher currency holdings relative to M2, other things being equal. Given these results on Government revenue, it can be said that countries with high fiscal burden experience rampant tax evasion; if high tax rates can be backed by strong enforcement capabilities, however, tax evasion would decrease. So, a significant portion of the underground economy can be converted to the recorded economy through optimal tax policy.

As stated in Bajada (2009), *"it is imperative, therefore, that policy makers need to seriously consider the rules, regulations, taxes and welfare benefits that may have ignited enthusiasm for underground activity while*

launching initiatives to combat growing areas of noncompliance”.

The main outcomes of this paper, in accordance with the conclusions founded by Schneider (1997), Schneider and Enste (2000), Dell'Anno (2003), Forte and Magazzino (2010) and Magazzino (2008, 2009, 2010, 2011) are that a rising of taxes and social security contributions, combined with increasing State regulatory activities, “[...] are the major driving forces behind the size and growth of the shadow economy” (Schneider and Enste, 2000).

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Table 1- Types of underground economic activities.

Type of Activity	Monetary Transactions		Non-Monetary Transactions	
Illegal Activities	Trade with stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling; fraud.		Barter of drugs, stolen goods, smuggling etc. Produce or growing drugs for own use. Theft for own use.	
	Tax Evasion	Tax Avoidance	Tax Evasion	Tax Avoidance
Legal Activity	Unreported income from self-employment; wages, salaries and assets from unreported work related to legal services and goods.	Employee discounts, fringe benefits.	Barter of legal services and goods.	All do-it-yourself work and neighbour help.

Source: Mirus and Smith (1997).

Table 2- List of the variables.

Variable	Explanation	Source
<i>C/M2</i>	Ratio between currency (the notes and coins held outside banks) and M2 (money and quasi money), logarithms	WB
<i>Y</i>	Real GDP per capita	WB
<i>r</i>	Real interest rate (%)	WB
<i>p</i>	Inflation rate, percentage change in GDP deflator	WB
<i>R</i>	Real Government revenue as % of GDP, logarithms	IMF
<i>G</i>	Real Government expenditure as % of GDP, logarithms	IMF
<i>E</i>	Household final consumption expenditure as % of GDP, logarithms	WB
<i>F</i>	Domestic credit to private sector as % of GDP, logarithms	WB
<i>OT</i>	Openness to trade, total trade (exports plus imports) as a percentage of GDP in constant prices, with a reference year of 2005, logarithms	PWT
<i>U</i>	Urban population (%), percentage of total population living in urban areas as defined by national statistical offices	WB
<i>IG</i>	Index of Globalization, weighted average of the following variables: economic globalization, social globalization and political globalization	Dreher – KOF
<i>IP</i>	Index of Participation, percentage of the total population who actually voted in the election	Vanhanen
<i>IC</i>	Index of Competition	Vanhanen

Source: our elaborations.

Table 3- Exploratory data analysis.

Variable	Mean	Standard Deviation	Minimum	Maximum
<i>C/M2</i>	-1.2509	0.3226	-2.3371	-0.2657
<i>Y</i>	8.2793	0.8115	5.9358	9.8127
<i>r</i>	6.4967	6.4441	-33.2888	38.5429
<i>p</i>	8.3802	10.7248	-19.2812	102.7546
<i>R</i>	3.2401	0.3435	2.0828	3.8988
<i>G</i>	2.7762	0.4000	1.0739	4.3880
<i>E</i>	4.1738	0.1863	3.3667	4.5635
<i>F</i>	3.7545	0.4566	2.3173	4.8538
<i>OT</i>	4.5966	0.4456	2.6503	5.6149
<i>U</i>	40.5679	18.1085	8.5000	83.7000
<i>IG</i>	41.1628	18.4893	4.9115	72.7331
<i>IP</i>	16.4959	6.1686	0.0000	29.2000
<i>IC</i>	42.5086	11.8543	0.0000	64.5000

Sources: WB, IMF, Vanhanen, Dreher – KOF and PWT.

Table 4- Correlation matrix.

	<i>C/M2</i>	<i>Y</i>	<i>r</i>	<i>p</i>	<i>R</i>	<i>G</i>	<i>E</i>	<i>F</i>	<i>OT</i>	<i>U</i>	<i>IG</i>	<i>IP</i>	<i>IC</i>
<i>C/M2</i>	1												
<i>Y</i>	.04	1											
<i>r</i>	-.09	-.09	1										
<i>p</i>	.31	-.23	-.16	1									
<i>R</i>	.50	-.13	.04	-.29	1								
<i>G</i>	.51	.00	-.12	-.34	.22	1							
<i>E</i>	.17	-.38	-.00	.18	.04	-.22	1						
<i>F</i>	.50	.41	.14	-.40	.48	.19	-.19	1					
<i>OT</i>	.51	.30	-.08	-.34	.71	.36	-.33	.56	1				
<i>U</i>	-.11	.34	-.05	.01	-.27	-.19	.30	.00	.05	1			
<i>IG</i>	-.08	.42	.09	.00	-.25	-.15	-.24	.03	.11	.09	1		
<i>IP</i>	.35	.22	.17	.28	.56	.11	-.18	.62	.36	.08	-.07	1	
<i>IC</i>	.05	.17	.11	.06	.52	-.19	.02	.37	.19	.15	-.04	.81	1

Notes: Bonferroni adjustment applied.

Sources: WB, IMF, Vanhanen, Dreher – KOF and PWT.

Table 5- Panel data estimations.

Variable	Model				
	(1)	(2)	(3)	(4)	(5)
Constant	0.2165 (0.2142)	0.6657 (0.4954)	0.0304 *** (0.0089)		-0.0068 (0.6723)
(C/M2) _{t-1}	1.2557 *** (0.0941)	0.9630 *** (0.1334)	0.3137 *** (0.0735)	0.9576 *** (0.1066)	0.6860 *** (0.0839)
(C/M2) _{t-2}	-0.2491 ** (0.1084)	-0.3302 *** (0.0721)	-0.1921 * (0.1027)	-0.3616 *** (0.0569)	-0.3317 *** (0.0565)
Y _t	0.0983 ** (0.0409)	0.0850 * (0.0449)	0.1097 ** (0.0044)	0.0865 ** (0.0363)	0.0933 ** (0.0396)
Y _{t-1}	0.1067 (0.0642)	0.0844 (0.0599)	0.0275 (0.0279)	0.0875 * (0.0493)	0.0734 ** (0.0354)
Y _{t-2}	-0.0056 (0.0314)	0.0126 (0.0268)	0.0104 (0.0188)	-0.0176 (0.0214)	-0.0238 * (0.0141)
r _t	-0.0091 * (0.0037)	-0.0049 (0.0042)	-0.0045 ** (0.0020)	-0.0042 (0.0035)	-0.0054 * (0.0028)
r _{t-1}	-0.0073 * (0.0035)	-0.0128 *** (0.0030)	-0.0069 * (0.0032)	-0.0135 *** (0.0023)	-0.0160 *** (0.0025)
r _{t-2}	0.0008 (0.0010)	-0.0002 (0.0011)	0.0002 (0.0007)	-0.0004 (0.0009)	0.0007 (0.0011)
p _t	0.0008 (0.0009)	0.0005 (0.0009)	0.0027 ** (0.0010)	0.0007 (0.0007)	0.0030 *** (0.0008)
p _{t-1}	0.0030 (0.0030)	0.0000 (0.0034)	0.0024 (0.0019)	-0.0005 (0.0028)	0.0030 (0.0034)
p _{t-2}	-0.0063 (0.0038)	0.0109 *** (0.0029)	-0.0064 ** (0.0028)	-0.0114 *** (0.0022)	-0.0152 *** (0.0028)
R _t	0.0425 (0.0463)	0.0111 (0.0412)	0.0039 (0.0292)	0.0088 (0.0350)	0.0740 (0.0509)
R _{t-1}	0.0702 (0.0770)	0.1153 (0.0845)	0.0761 (0.0603)	0.1008 (0.0657)	0.0903 (0.0723)
R _{t-2}	0.0009 (0.0677)	0.1142 (0.0681)	0.0559 (0.0808)	0.1043 * (0.0569)	0.1503 * (0.0799)
G _t	0.1404 (0.0874)	0.1544 (0.1096)	0.0875 (0.0689)	0.0587 * (0.0426)	0.1211 (0.0936)
G _{t-1}	-0.0544 (0.0852)	-0.0955 (0.0791)	-0.1560 * (0.0774)		-0.1017 ** (0.0503)
G _{t-2}	(0.1613) ** (0.0551)	0.1061 * (.0478)	-0.0213 (0.0797)		0.0264 (0.0907)
E _t	0.0076 (0.0436)	0.0122 (0.0510)	0.0259 (0.0301)	0.0191 (0.0388)	0.0171 (0.0520)
E _{t-1}	-0.0326 (0.0297)	-0.0002 (0.0269)	-0.0142 (0.0294)	0.0059 (0.0212)	-0.1381 ** (0.0613)
E _{t-2}	0.0174 (0.0445)	0.0164 (0.0491)	0.0527 ** (0.0229)	0.0311 (0.0307)	0.0576 (0.0531)
F _t	0.0197 (0.1600)	0.1221 (0.1140)	0.0621 (0.1054)	0.1310 (0.0875)	0.0797 (0.0862)
F _{t-1}	-0.2069 * (0.1140)	-0.1402 (0.0802)	-0.0611 (0.0599)	-0.1236 ** (0.0584)	0.0151 (0.0649)
F _{t-2}	0.1516 * (0.0813)	0.1958 *** (0.0501)	0.1027 ** (0.0317)	0.2016 *** (0.0354)	0.1917 *** (0.0333)
OT _t					0.2430 *** (0.0501)
OT _{t-1}					-0.0009 (0.0306)
OT _{t-2}					-0.1325 * (0.0684)
U _t					0.0627 * (0.0363)

U_{t-1}					-0.0324 (0.0512)
U_{t-2}					-0.0171 (0.0429)
IG_t					0.0062 ** (0.0026)
IG_{t-1}					0.0074 ** (0.0035)
IG_{t-2}					-0.0087 ** (0.0038)
IP_t					0.0009 (0.0014)
IP_{t-1}					-0.0040 ** (0.0017)
IP_{t-2}					0.0023 (0.0017)
R^2	0.9802 ^a	0.9566 ^b	0.5345		
<i>Ramsey</i>	(0.0229)				
<i>B.-Pagan</i>		(0.0000)			
<i>Hausman</i>	(0.0000)				
<i>Hansen</i>			(0.0523)	(1.000)	(0.717)
<i>A.-Bond</i>	(0.1159)		(0.2603)	(0.090)	(0.440)
<i>Dif. Sargan</i>			(0.7189)		(1.000)

Notes: (1) POLS, (2) Within Groups, (3) IV (GMM-Dif), (4) and (5) GMM-System; a: Adjusted R^2 , b: R^2 within. Number of groups = 12. Year dummies are included in all models. Asymptotic standard errors in parentheses. For the diagnostic tests P-Values are reported.

Sources: WB, IMF, Vanhanen, Dreher – KOF and PWT

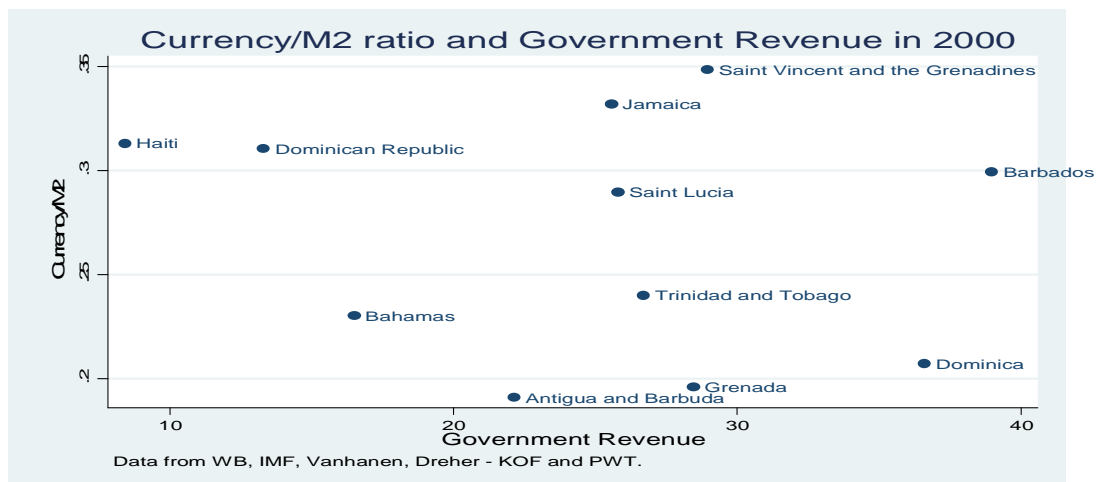


Fig. 1- Currency/M2 ratio and Government revenue in the Caribbean countries in 2000.

Source: our elaborations.